AGRICULTURAL LABOR RELATIONS BOARD
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STATE OF CALIFORNIA
AGRICULTURAL LABOR RELATIONS BOARD

PUBLIC BOARD MEETING MINUTES

TUESDAY, AUGUST 10, 2021
10:00 A.M.

There was no physical meeting location. Attendance was by remote meeting only (meeting number **867 6964 0482**), via the attendee's choice of either Zoom videoconference or teleconference.

Board Members:	Chair Victoria Hassid Members Barry Broad, Cinthia Flores, Isadore Hall, and Ralph Lightstone
ALRB Staff:	General Counsel Julia Montgomery Deputy General Counsel Franchesca Herrera Assistant General Counsel Chris Mandarano Executive Secretary Santiago Avila-Gomez Administrative Services Chief Brian Dougherty Administrative Law Judge Mark Soble Regional Director Chris Schneider Regional Director Jessica Arciniega Chief Board Counsel Todd Ratshin Board Counsels Laura Heyck and Itir Yakir ALRB Outreach Coordinator Daniela Ramirez Executive Assistant to the Board Chair Ed Hass Board Staff: Devaka Gunawardina and Lori Miller Field Examiners: Patricia Ochoa. Margarita Padilla, and Merced Barrera General Counsel staff: Aqsa Ahmad, Audrey Hsia, Erika Flores, Flavio Bautista, Jennifer Takehana, Jeylee Quiroz, Kenia Acevedo, Laura Camero, Melosa Granda, Monica Ortiz, Rosario Miranda, and Yesenia De Luna
Interpreter:	Ashley Nuñez
Court Reporter:	Marlee Nelson
Presenters:	Marc Schenker, Kathy Baughman McLeod, Lauren Parker, A. Patrick Behrer

Members of the public may review a transcript of this meeting, including full public testimony and comment, at https://www.alrb.ca.gov/meetings/notices-minutes/ as soon as it becomes available.

These meeting minutes include Appendices, which provide additional information about topics that were addressed during this ALRB Public Board Meeting. Each Appendix is referenced at the appropriate place within these Minutes.

OPEN SESSION

1. Call to Order, by Board Chair Victoria Hassid, 10:00 a.m.
    - Rollcall of Board Members; all Board Members present.
2. Approval of Minutes

    Public Board Meeting Minutes, June 8, 2021:

    - Motion to approve by Board Member Barry Broad.
    - Seconded by Board Member Ralph Lightstone.
    - June 8, 2021 Public Meeting minutes approved by the Board 5-0.

    Regional Directors Meeting Minutes, June 8, 2021:

    - Motion to approve by Board Member Barry Broad.
    - Seconded by Board Member Cinthia Flores.
    - June 8, 2021 Regional Directors minutes approved by the Board 5-0.

3. Chair's Report (Victoria Hassid)
    - On June 23, 2021, the U.S. Supreme Court issued its decision in *Cedar Point Nursery vs. Hassid* that the access regulation constitutes an uncompensated per se physical taking in violation of the fifth and fourteenth amendments of the U.S. Constitution. The Supreme Court remanded the case for further proceedings. ALRB will continue to ensure that farmworkers are informed of their rights, while comporting with the Court's decision in this case.
    - First new ALRB Strategic Plan in ten years is now in progress. ALRB staff has been providing feedback for over a month. Employers, unions, attorneys, community-based organizations (CBOs), and farmworkers will also participate in the ALRB Strategic Plan.
    - The new ALRB Salinas Regional Director is Jessica Arciniega.
    - Former California Labor and Workforce Development Agency (LWDA) Secretary Julie Su has been confirmed as the new Deputy Secretary at the U.S. Department of Labor.
    - Natalie Palugyai is the new LWDA Secretary, replacing Julie Su.
    - Welcome back to LWDA Undersecretary Stewart Knox.
    - Board Chair Victoria Hassid is going on maternity leave starting in mid-September, returning in early 2022.
    - Ralph Lightstone will be Acting Board Chair.
4. Executive Officer's Report on Elections, Unfair Labor Practice Complaints, and Hearings (Santiago Avila-Gomez)
    - See Appendix A.

5. Litigation Report (Todd Ratshin)

- See Appendix B.

6. General Counsel's Report (Julia Montgomery)

- Jessica Arciniega has been promoted to Regional Director for the Salinas region, after more than eight years in the ALRB Oxnard office.
- The General Counsel office has vacancies for one attorney each in the Oxnard, Salinas, and Visalia offices, and for a Field Examiner and a Staff Services Analyst in the Salinas office.
- Since June, the General Counsel's office has completed the following Pre-Hearing Settlements. All settlements included the standard remedies of reading, posting, and mailing notices to all workers.
    - A farmworker at a pistachio and almond orchard in Kern County was fired for complaining about insufficient and unclean water for the farmworkers. $11,015 backpay.
    - A farmworker at an almond orchard in Madera County was fired for complaining about the actions of a foreman. $11,500 backpay
    - A farmworker in a citrus orchard in Riverside County was fired for complaining about the piece rate. $511 backpay.
    - A farmworker at a vegetable grower in Monterey County was issued a disciplinary ticket for complaining about working conditions. The non-monetary settlement expunged the disciplinary ticket from the worker's records.
- The General Counsel's outreach staff participated in nine events, primarily in Tulare, San Luis Obispo, and Santa Barbara Counties. Distributed 2200 guides about Covid-19 – in English, Spanish, and indigenous languages, and accessible to all literacy levels. Also partnered with LWDA, other state agencies, and CBOs to distribute information about the dangers of heat illness.
- Participated in Spanish-language radio interviews in Tulare and Sonoma Counties.
- Participated in six live Facebook outreach events about farmworker rights.
- Conducted nine training sessions to worker groups, CBOs, and agricultural employers. Attended by 103 trainees total.
- Through AgSafe, conducted training of supervisors and employers about employer responsibilities under the ALRA.
- The ALRB Help Line, which assists with farmworker rights and with referrals to external resources, is seeing an increasing call volume. This increase indicates that awareness of the availability of this hotline is also increasing.

7. Division of Administrative Services Report (Brian Dougherty)

- Year End Close was successfully completed on June 30
- Administrative Services is currently working with DGS to complete the ALRB year-end financial statement; expected completion date is the end of August.
- ALRB spent 99% of our annual appropriation, excluding the one-time limited-term funding for three years of outreach; that funding is still in our remaining balance.
- The higher filled-position rate accounts for increased expenditures.
- Successfully implemented start of new fiscal year; $11.5 million appropriated to ALRB for fiscal year 2021-22.
- ALRB operating and equipment budget for 2021-22 does not include the 5% ($204,000) reduction that had been proposed.

- Year-end having been completed, FI$Cal and CalAters are back online, for processing travel reimbursement claims and purchase orders.

8. Regulations (Todd Ratshin)

   - Nothing to report.
   - No update from Regulations Subcommittee.

9. Legislation (Todd Ratshin)

   - See Appendix C.

10. Personnel (Victoria Hassid)

    - Nothing to report.

11. Public Comment

    - None.

Approximate 25-minute break started at 10:34 a.m.

12. Informational Panel: Overview of Extreme Heat and Impact of Heat on Agricultural Industry and Farmworkers

    Start time 11:00 a.m.

    Introduction by Victoria Hassid:

    - There was a recent heat event in the Pacific Northwest.
    - Yesterday, the United Nations issued their report that climate change is not a future event, but we are already experiencing its effects.
    - Agriculture has been, and will continue to be, heavily impacted.

    a. Kathy Baughman McLeod, Senior Vice President and Director, Adrienne Arsht-Rockefeller Foundation Resilience Center.

       See Appendix D.

       Board Chair Hassid asked if the Extreme Heat Resilience Alliance includes any experts specifically focused on agriculture.

       Ms. Baughman McLeod replied that the Alliance includes one food security expert. Agriculture is a piece of that. The focus is more on the heat impact (over-ripening) on corn, wheat, and soy, than on the workers. Some farms now have 3:00 a.m. shifts to pick heat-sensitive crops, including berries.

       Ms. Baughman McLeod also stated that possible consequences of extreme heat include a northward migration of farms and farmworkers; some current agricultural areas are becoming unlivable due to heat and lack of employment opportunities; a switch to less heat-sensitive crops; and heat-related farmworker illnesses.

b. Lauren Parker, Postdoctoral Fellow and Coordinator, United States Department of Agriculture (USDA) California Climate Hub

See Appendix E.

Board Chair Hassid asked about USDA recommended best practices to help mitigate the increase in extreme heat, both temperature and duration.
Dr. Parker stated that, over the next six months, the Climate Hub will be developing a menu of strategies to provide resiliency, both short-term and long-term:

- Soil amendments, to increase water-holding capacity of soil
- Infrastructure improvements, to protect crops from extreme heat
- Irrigation, to supply water and cooling to plants
- Develop methods to resupply the aquifer when there is little or no precipitation

Board Chair Hassid asked, which crops are most adversely affected by extreme heat?
Dr. Parker replied that background warming has a higher impact than individual extreme heat days.

- California's extensive existing water infrastructure helps alleviate some effects.
- Walnuts need cool days (chill accumulation) in winter, as well as heat in summer.
- Lettuce is wilting faster, and might need to relocate to cooler, wetter areas.
- Some crops do better in cold and some do better in heat

Board Member Lightstone asked if we are seeing changes in planting of crops, because of the increase in extreme heat.
Dr. Parker replied that tomatoes are planted and harvested earlier than before. She will research and respond about other crops, and about current predictions for longer-term trends.

Board Member Broad asked if increases in both day and night temperatures mean that it will become impossible to grow tree crops that have freezing requirements.
Dr. Parker replied that there is a shrinking geographical area where some crops that require chill time – such as walnuts – will be able to grow. Even crops that require less chill time, such as almonds, might not have sufficient water to grow.
Dr. Parker stated that Universities in Georgia and Florida are currently trying to develop new varieties of peaches that don't require as many chill days. Other crops will simply no longer be grown in the warming climate.

Board Member Flores asked which types of crops are better suited to grow in extreme heat?
Dr. Parker stated that there is no one crop that will do well in any warm climate. Climate, availability of water, composition of the soil, availability of agricultural labor, and proximity to processing plants and distribution hubs, all affect which crops can grow, and where they can grow.

c. A. Patrick Behrer, Post-Doctoral Fellow at the Center for Food Security and Environment at Stanford University

See Appendix F.

Board Chair Hassid asked if there are variations in rates of injury and compensation between different types of outdoor work. For example, peace officers typically have higher pay and better benefits than construction, utilities, and farm workers.
Dr. Behrer replied that agriculture is second only to construction in number of heat-related injuries. The study did not specifically break-out and examine injury rates among peace officers.

Board Chair Hassid asked if there are fewer workplace heat injuries for employees who work under prevailing wage laws, union collective bargaining agreements, and workplace safety rules, compared to others who do the same type of work but lack those protections.
Dr. Behrer replied that this data is still being compiled and analyzed. He did observe that a carpenter's helper who is paid $25,000 per year, and an electrician who is paid $90,000 per year, can't be analyzed under one statistic labeled "construction."

Board Chair Hassid observed that, under a 2017 law, the agricultural overtime rate kicks in at 9.5 hours, and it costs employers too much to pay this overtime. Chair Hassid asked if less time outdoors per worker has reduced the number of heat injuries among farmworkers.
Dr. Behrer replied that the data in his study ends in 2017. The study team will need to review more recent worker compensation data, to determine what impact this law is having.

General Counsel Montgomery asked what other data, besides workers' compensation was used in the study.
Dr. Behrer replied that other data sources for the study included the federal Bureau of Labor Statistics; the survey of occupational injuries and illnesses; and the census of fatal occupational injuries, which contains data from employers, hospitals, and coroners.

Board Member Flores asked about the causes of low-income workers having twice as many heat injuries as higher-paid workers. Are the type of industry, the type of work performed, and the number of supervisors enforcing workplace safety, factors in this statistic?
Dr. Behrer responded that, while industry and type of work are factors, lower-income workers (such as a carpenter's assistant) typically spend more hours working outside in extreme heat, use more dangerous equipment, and perform riskier tasks, than higher-paid workers (such as electricians). As workers gain seniority, they are typically promoted into higher-paying and less risky jobs. Young workers, males, and workers without a high school diploma, are typically placed in riskier jobs than are older workers, females, and high school or college graduates. Union members have better protections for workplace safety, especially as they gain seniority and can choose less dangerous work.

Board Member Lightstone asked if the study shows significant differences in heat-injury rates between employees of construction companies and employees doing the same types of work on higher-paying public works projects.

Dr. Behrer noted that the data sample at the California state level is not broad enough to make that kind of determination. The study is now moving from the state to the national level, which should be a large enough data sample to determine these types of statistics.

Dr. Parker observed that the study's statistic, showing that extreme heat causes economic losses in the hundreds of millions of dollars, could be a better catalyst than public health concerns, to drive new legislation to curb climate change.
Dr. Behrer commented that his team is not yet ready to use the study data to drive government policy. However, one idea under consideration is expanding the heat illness protection standard, to include indoor work such as factories. Also, the current heat standard does not specify that no work should be done in heat of 110+ Fahrenheit
Dr. Behrer also observed that if current mitigation activities succeed, strategies might not need to be based on the direst predictions. Conversely, climate change might occur more rapidly than predicted, and new accelerated strategies might be needed.

d. Mark Schenker, MD, MPH. Distinguished Professor Emeritus & Founding Director, Western Center for Ag Health and Safety, University of California at Davis.

See Appendix G.

Board Chair Hassid asked if there is any research on how a short-term acute heat event can have a longer-term health effect.
Professor Schenker stated that the study showed significant kidney injury from one heat event in about 12 percent of those studied. A person can recover from one kidney injury, but repeated heat exposure and repeated kidney injury can result in chronic kidney disease and kidney failure. Even with treatment, mortality rate from heat stroke is 50 percent. But heat-related illness is 100 percent preventable.

Board Chair Hassid asked if there is any short-cut method for farmworkers to adjust to long periods of extreme heat more quickly.
Professor Schenker replied that acclimatization to extreme heat can take anywhere from 4 days to 2 weeks, and cannot be accelerated. Acclimatization is the body's way to build-up a defense against organ damage. The best strategy to avoid illness is to reduce the amount of work preformed under high heat and high humidity.

Board Chair Hassid asked for more information about the use of pills in the physiological study.
Professor Schenker replied that this pill is the size of a vitamin pill, and contains a transmitter, which records changes in core body temperature. The receiver is worn on the belt. This transmitter is for research only; it doesn't help the body to cope with extreme heat. The body excretes the pill and transmitter after a day or two.

Board Member Lightstone asked about the study of metabolic heat rate, which used separate variables for productivity and piece rate. These two factors are intertwined, so how was the study able to track them separately?
Professor Schenker replied that the study found that metabolic workload was the major factor in heat illness. Piece rate was a correlated factor, as a facilitator of metabolic workload, but it was not statistically significant.

A public comment was received about the need to communicate, to farmworkers, to their employers, to unions, and to community-based organizations, the risks of illness and even death from prolonged exposure to extreme heat. Farmworker deaths have been increasing in Coachella Valley, but the TV and radio news never talk about it. Farmworkers fear being fired or deported if they speak-up about this issue, even as they watch more of their coworkers become ill or die. Farmworkers and their supervisors need to be educated about their rights and responsibilities, the dangers of heat, how to respond, and how to take care of their health.

Professor Schenker added that workers need to know that the OSHA standard for workplace health and safety applies to all workers, not just to citizens and documented workers. Statistics support the need for better worker education about heat illness:

- 42 percent of workers continue to work even while suffering heat illness.
- 72 percent become dehydrated, but 97 percent think they have enough water.
- Almost 90 percent aren't concerned that working in extreme heat could make them ill.

Attorney Melosa Granda added that the ALRB General Counsel program and Cal-OSHA are working together on several investigations involving heat violations. Employers are not training workers about regulations and their rights, such as how much water farmworkers should be drinking under extreme heat conditions. Many employers have no heat illness prevention plan in place.

Devaka Gunawardina asked if the study measured work intensity by whether the activity can be paused during extreme heat, or must continue despite the heat. For example, lifting and loading can usually wait, whereas picking crops, before they wilt in the heat, must continue.
Professor Schenker replied that the study showed that any type of increased workload, increases the risk of a higher core body temperature. Working in temperatures above 80 degrees Fahrenheit increases illness and dramatically reduces productivity.

13. Announcements
    - Next Public Board Meeting is Tuesday Oct 12. Ralph Lightstone will preside as Acting Board Chair.

14. Adjourn Meeting

    The meeting was adjourned at 1:03 p.m.

APPENDIX A:
EXECUTIVE SECRETARY'S REPORT

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ALRB PUBLIC MEETING
EXECUTIVE OFFICER'S REPORT
ELECTIONS, UNFAIR LABOR PRACTICE COMPLAINTS, AND HEARINGS

DATE: August 10, 2021

TO: Agricultural Labor Relations Board

FROM: Santiago Avila-Gomez, Executive Secretary

ELECTION ACTIVITY

1. Teamsters Local 1932 was certified as the exclusive bargaining representative of Tikun Olam Adelanto, LLC's agricultural employees effective June 28, 2021 (Election date: June 14, 2021; *Tikun Olam Adelanto, LLC*, Case No. 2021-RC-001-VIS).

COMPLAINTS

One complaint was filed, and two complaints were withdrawn.

---------- ***Complaint*** ----------

1. *Sweetwood Farm, Inc. dba Red Rooster,* Case No. 2020-CE-009-VIS (Tomatoes; Merced, Fresno, and Santa Clara Counties, CA)

---------- ***Withdrawn*** ----------

1. *Satellite Farms, LLC.,* Case No. 2019-CE-042-SAL (June 16, 2021)
2. *Santa Rosa Berry Farms, LLC.,* Case No. 2019-CE-050-SAL (July 28, 2021)

HEARINGS and Administrative Law Judge Decisions

No hearings were held, and no Administrative Law Judge decisions issued.

BOARD DECISIONS, ADMINISTRATIVE ORDERS, PENDING BOARD ACTION

No Board decisions or administrative orders issued; and no cases are pending before the Board.

APPENDIX B:
LITIGATION REPORT

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ALRB PUBLIC MEETING
LITIGATION REPORT

DATE: August 10, 2021

TO: Agricultural Labor Relations Board

FROM: Todd M. Ratshin, Chief Board Counsel

This report discusses updates and developments that have occurred in litigation matters involving the Board since its June 8, 2021, meeting.

Petitions for Writ of Review of Unfair Labor Practice Decisions

California Appellate Courts

► ***California Artichoke and Vegetable Growers Corp. dba Ocean Mist Farms v. ALRB*, Sixth District Court of Appeal, Case No. H048797**

Summary: Petition for writ of review of the Board's decision in 46 ALRB No. 5, in which the Board found the employer unlawfully suspended a group of employees for engaging in protected concerted activity.

Status: Petitioner filed its reply brief on June 11, and the matter now is fully briefed and pending issuance of an order dismissing the petition or issuing a writ of review.

Other Board Litigation

Federal Court

► ***Cedar Point Nursery and Fowler Packing Co., Inc. v. Hassid, et al.*, U.S. Supreme Court, Case No. 20-107 / U.S. Court of Appeals, Ninth Circuit, Case No. 16-16321 / U.S. District Court, Eastern District of California, Case No. 1:16-cv-00185-NONE-BAM**

Summary: The growers sought review of the Ninth Circuit's opinion rejecting their argument the Board's access regulation (Cal. Code Regs., tit. 8, § 20900) violates the Fifth Amendment's Takings Clause. (*Cedar Point Nursery v. Shiroma* (9th Cir. 2019) 923 F.3d 524; see also *Cedar Point Nursery v. Shiroma* (9th Cir. 2020) 956 F.3d 1152 [order denying petition for rehearing en banc].)

Status: The Court issued an opinion on June 23, 2021, holding the Board's access regulation effects a taking of the growers' property and remanding the case for further proceedings. On July 26, the Court issued a certified copy of its judgment to the Clerk of the United States Court of Appeals for the Ninth Circuit. Also on July 26, the district court issued an order directing the parties to submit a joint status report by August 9.

APPENDIX C:
LEGISLATIVE REPORT

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ALRB PUBLIC MEETING
LEGISLATIVE REPORT

DATE: August 10, 2021

TO: Agricultural Labor Relations Board

FROM: Todd M. Ratshin, Chief Board Counsel

This report provides updates on legislative activity affecting the Agricultural Labor Relations Act or the Agricultural Labor Relations Board since the Board's June 8, 2021, meeting.

Assembly Bill No. 616 (Asm. Mark Stone - D)

This bill was introduced on February 12, 2021, and is sponsored by the United Farm Workers of America. The bill was amended in the Senate on June 17 and re-referred to the Senate Committee on Appropriations. On July 15 the bill was ordered to a second reading pursuant to Senate Rule 28.8.

This bill would allow agricultural employees to select a labor organization as their exclusive bargaining representative through a "representation ballot card election" as an alternative to conducting a secret ballot election as provided under current law. These procedures would be codified in proposed new Labor Code section 1156.35. This bill also would add new Labor Code section 1162 requiring an employer to post an appeal bond as a condition of seeking judicial review of any order providing monetary relief to agricultural employees or a labor organization.

The full text of the bill, as amended, and further information on it are available at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB616.

APPENDIX D:
EXTREME HEAT RESILIENCE ALLIANCE

Kathy Baughman McLeod, Senior Vice President and Director, Adrienne Arsht-Rockefeller Foundation Resilience Center

- Climate change has health, economic, and infrastructure impacts.
- Heat is the number one killer out of all climate-related issues, "the silent killer," more than floods and hurricanes.
- Sixth assessment report of the United Nations' Intergovernmental Panel on Climate Change (IPCC), published yesterday, predicts an average temperature increase of 1.5 degrees centigrade [34.7 degrees Fahrenheit] above pre-industrial levels by 2050, and an increase of 2 degrees centigrade [35.6 degrees Fahrenheit] by 2099.

  The full report is at
  https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf

  The IPCC summary of this report is at
  https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Headline_Statements.pdf

- 2021 emissions are the highest in a decade, and heat is increasing with it
- Farmworkers have the least impact on heat but bear the brunt of its affects; this is an inequity
- There is no heat season, like there is a fire season and a hurricane season.
- There are also no names or categories for heat waves, as there are for fires and hurricanes,
- Very few places have Early Warning Systems for heat waves, as there is for hurricanes.
- We can't see or hear a heat wave like we can with destruction by fire or hurricane. A heat wave is not visible in aerial photography, and not visually dramatic.
- No organization oversees heat waves, such as FEMA does for floods and the U.S. Forest Service and CalFire do for wildfires.
- The Extreme Heat Resilience Alliance was formed in 2019. Consists of municipal, state, and federal government officials, insurance companies, experts in disaster response (such as Red Cross), experts in public health, behavioral scientists, atmospheric scientists, climatologist, meteorologists, medical doctors, and economists.
- The Alliance's vision is a world without death or loss of livelihood from heat. Goal is to reach out to one billion people globally.

- Ironically, extreme heat is not one of the issues that is brought up when discussing global warming.
- The UC Berkeley report shows that heat is not reported as a cause for hospitalization, illness, or death, and there is no medical billing code for heat.
- Typically, heat illness is reported and billed as renal failure, heart failure, etc.
- Hurricanes affect property, but heat has an adverse impact on human health. Heat effects are not as dramatic, not as visible.
- Another factor, besides climate change, is urban heat islands: how we construct buildings, and their proximity to each other, can increase heat in a neighborhood.
- Need to educate decision-makers about heat risks, and costs to recover from a heat wave.
- Need to develop/enact effective evidence-based policies.
- We need more trees: the temperatures can be as much as 45 degrees cooler under shade than in concrete, paved, industrial regions.
- Los Angeles County is investing in heat-risk reduction, and in early warning systems for heat waves. Need to make capitol available to communities around the world, to also invest in these technologies, including the ability to quantify risks.
- Study of economic impacts of extreme heat will be published in about two weeks.
- Type of work performed, and geographical area where that work is performed, can increase the adverse impact of heat on human health, on the economy, and on the personal finances of individual workers.
- Heat issues are addressed in the new federal infrastructure bill
- In terms of influencing human behavior and setting government policy, has naming and categorizing hurricanes helped?
- Will doing the same help with drawing attention to heat waves?
- Methodology for categorizing heat waves (air masses), need to be linked to effects on human health, as opposed to link to property damage used for fires and hurricanes.

APPENDIX E:
CHANGES IN CLIMATE AND EXTREME HEAT AND IMPLICATIONS FOR AGRICULTURE IN CALIFORNIA

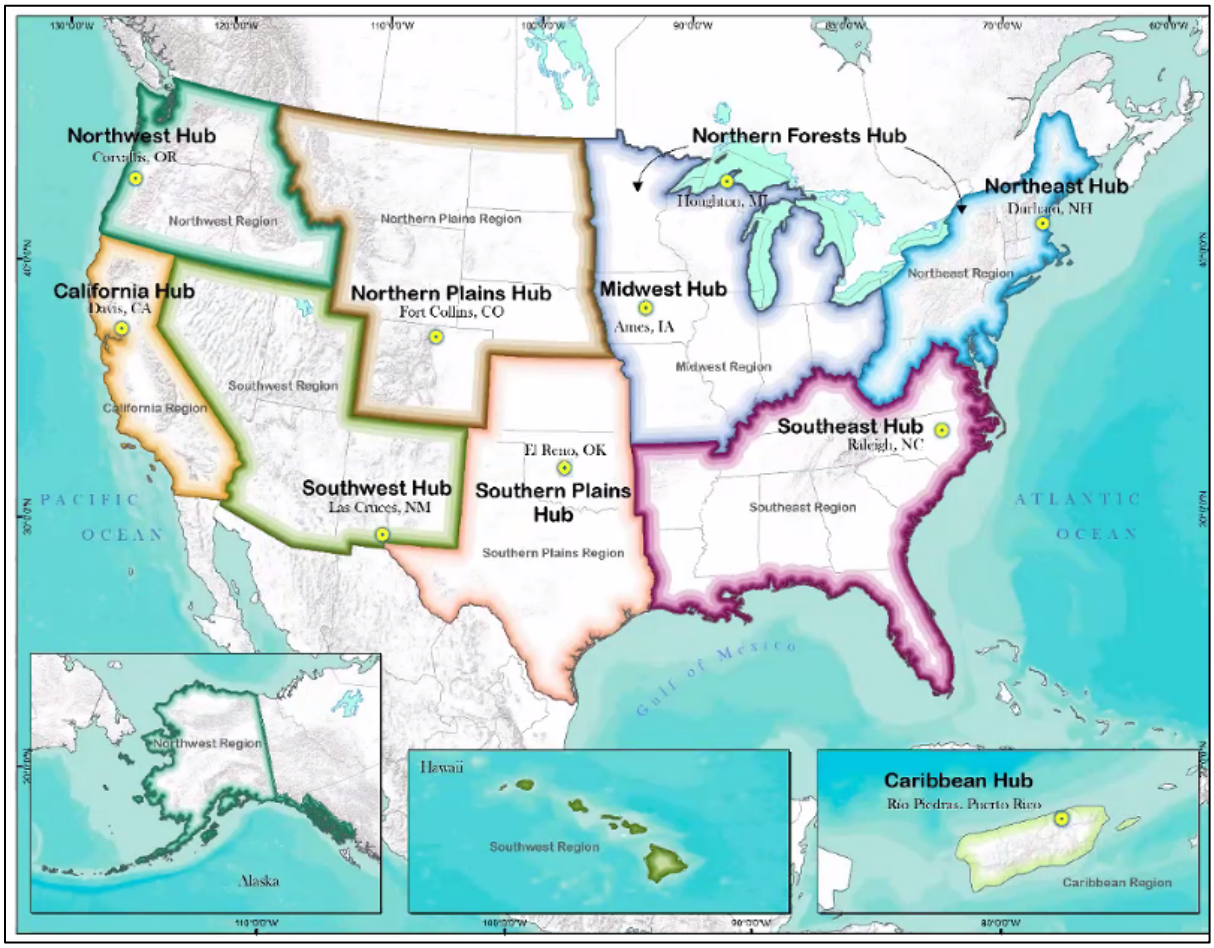
Lauren Parker, Postdoctoral Fellow and Coordinator, United States Department of Agriculture (USDA) California Climate Hub

Dr. Parker is an applied climatologist, with focus on agricultural systems

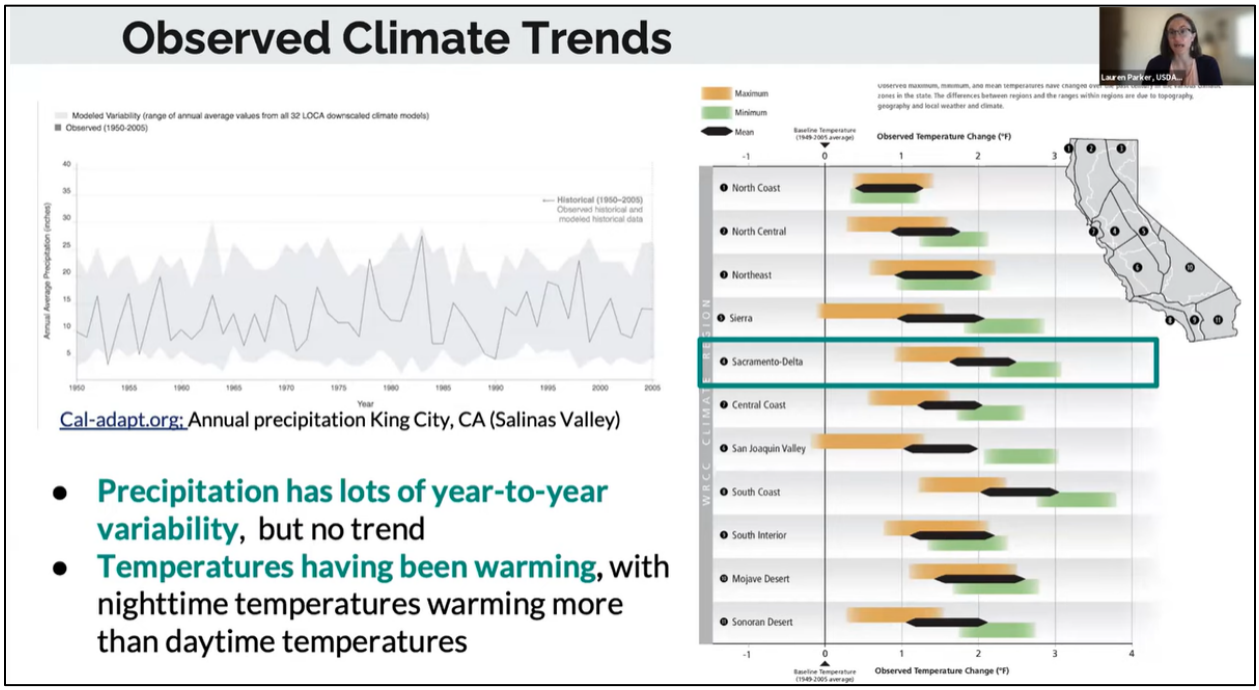
The USDA Climate Hub was established in 2014 to support climate-informed decision making for managing farms, ranches, and forests. The purposes of the Climate Hub include:

- Educating decision-makers about extreme heat and climate change
- Analyzing the physical and environmental changes caused by heat and climate change

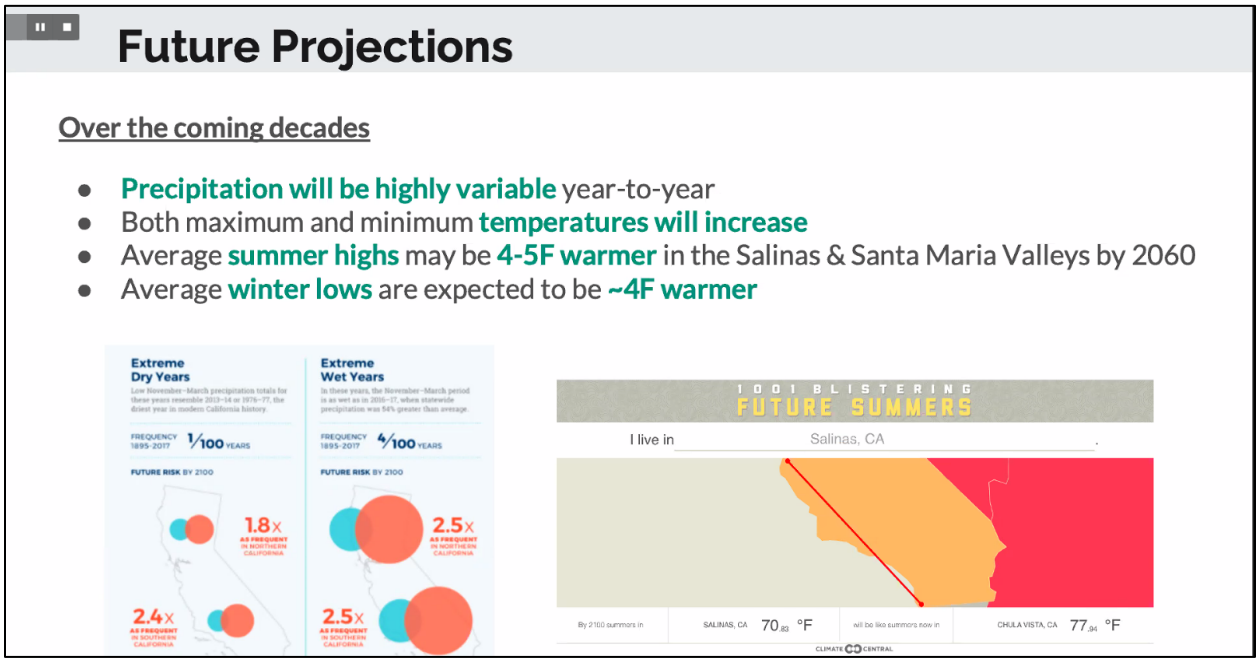
The map below shows the regions served by each USDA climate hub.



Each hub partners with USDA and university scientists, extension agents, and national and regional non-profit organizations.



Sacramento is already seeing a 1.5-degree Fahrenheit increase by day, 2 degrees at night, over the past two decades (shown in green highlight, above right).



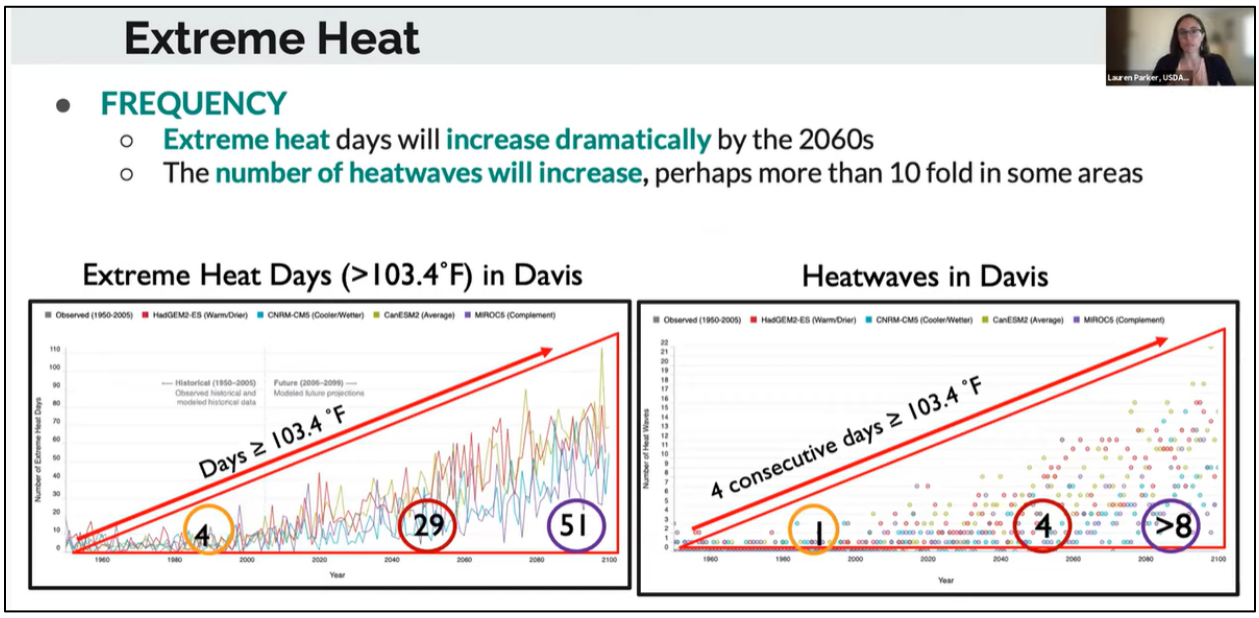
Extremely dry years like 2013-14 are becoming more common – about twice as common as in the past. Heavy precipitation years like 206-17 (more than 50% more precipitation than normal), while they will still occur, are becoming rarer (about 2.5 times less likely than in the past).

“Precipitation whiplash” refers to year-by-year variability in precipitation

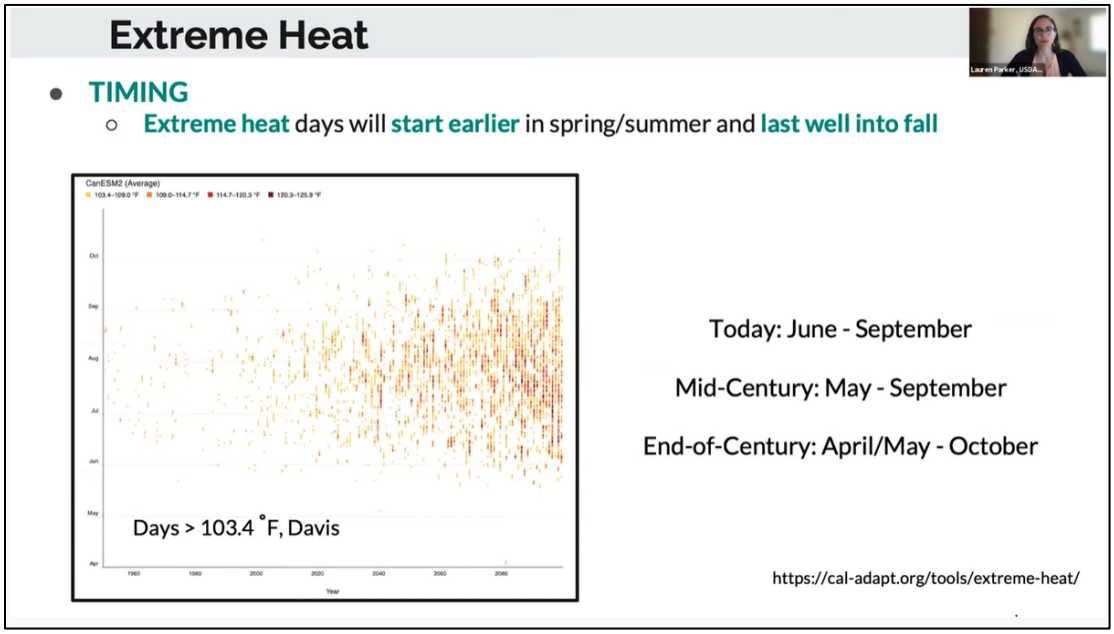
Temperatures will be 4 degrees F warmer by mid-century, and 7 degrees warmer by the end of the 21st century.

If we continue to do nothing bout extreme heat and background warming:

- Increase from 4 to 29 (by 2050) to 51 (by 2100) extreme heat days per year
- Increase from 1 to 4 (2050) to 8 (2100) or more multi-day heat waves per year



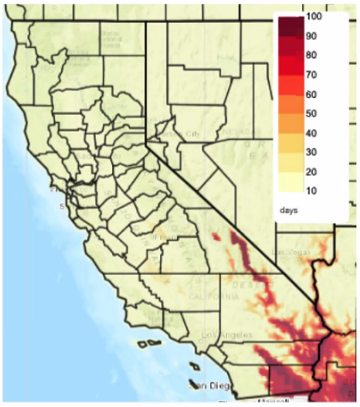
Temperature increase varies by area in absolute degrees, but will increase even in cooler coastal areas



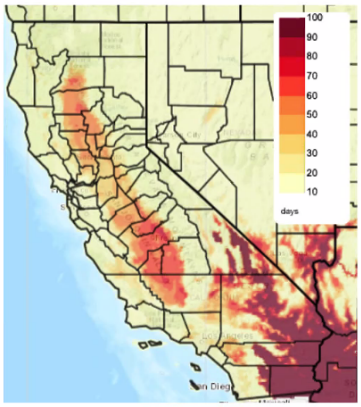
By mid-century, heat starts earlier – by mid-May. By the end of the century, extreme heat will start in April and last into fall, more total heat days that are above 103.4 degrees F.

HEAT INDEX

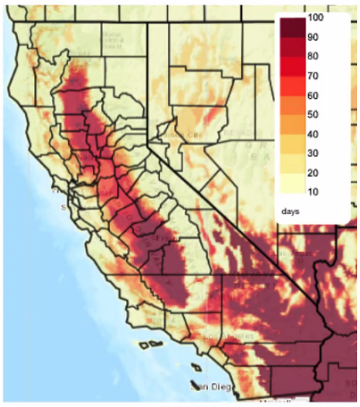
- **Days with a heat index above 100˚F will increase** most dramatically across the Central, Coachella, and Imperial Valleys, and the Inland Empire
  - ⇧30-40 days by 2060s, ⇧70-80 days by 2090s



1971-2000, modeled average



2040-2069, RCP8.5 average



2070-2099, RCP8.5 average

Implications for Agriculture

- Changing phenology
  - Potential for shifts in planting & harvest time has implications for timing of labor needs
- Increased evapotranspiration & greater water demand
- Increased risk of drought
  - Dry soils are more susceptible to wind erosion; potential for air quality issues, transport of microbes (Valley Fever)
- Greater plant and animal stress due to extreme heat
  - Desiccation of plants, reduced crop quality, potential for reduced milk production
- Potential for more frequent and larger wildfires
  - Air quality issues for farm workers

Less precipitation, higher temperatures lead to more frequent droughts
More and bigger wildfires
More toxins in the air from burning non-organic matter

https://www.climatehubs.usda.gov/

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APPENDIX F:
TEMPERATURE, WORKPLACE SAFETY, AND LABOR MARKET INEQUALITY

A. Patrick Behrer, Post-Doctoral Fellow at the Center for Food Security and Environment at Stanford University

Dr. Behrer is an Economist in the Center for Food Security at Stanford University. He and his colleagues released a working paper two weeks ago, which examines the impact of temperature on workplace safety and on labor inequality.

- Heat kills hundreds of thousands of people every year.
- Heat injury rates are even higher than heat deaths.
- Low-income and minority workers are disproportionately impacted

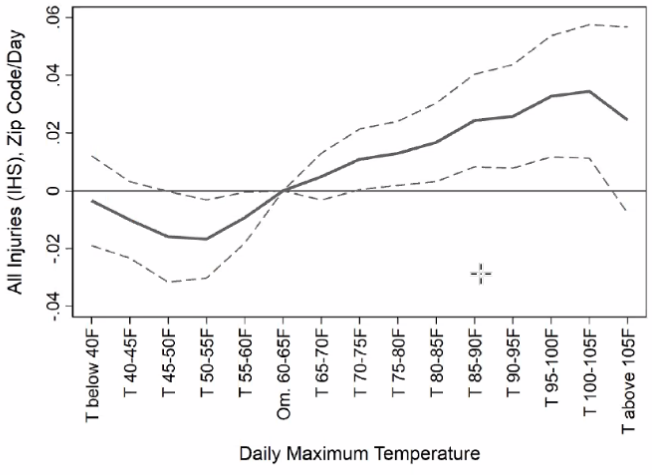
We measure injuries with CA worker compensation claims

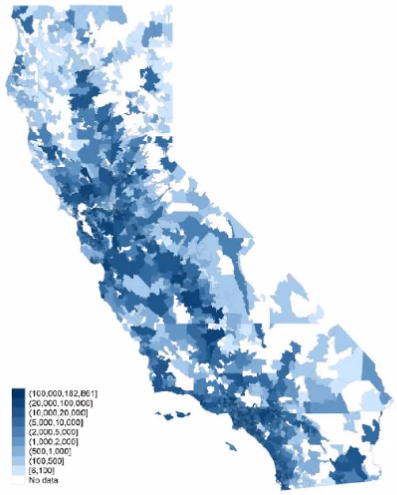
We use 12 million injury claims from the universe of worker compensation claims in California from 2001-2017 to answer three questions.

1. What is the relationship between temperature and workplace safety and injuries?
2. How does this relationship change across the income distribution?
3. What is the role of policy in facilitating adaptation and worker protection?

Worker injuries increase on hot days

$$Inj_{idmy} = \Sigma_1^k \beta_1^k Temp_{idmy} + \Sigma_1^p \delta_1^p Precip_{idmy} + \eta_{im} + \gamma_{my} + \epsilon_{idmy}$$





Heat illness impacts 5 to 15 per cent of workers
60 to 70 degrees Fahrenheit is optimal for outdoor work

The study compared workers compensation claims within the same zip code, on a 70-degree and on a 100-degree day, for the same types of work and for the same income levels. The difference in the number of claims is the plausible impact of heat on workplace injuries.

Unsurprisingly, hot days increase heat related injuries more…

- Heat related injuries – heat syncope, heat rash, heat stroke, etc.
- A day between 90-95°F increases heat related injures by 276% relative to the average day.
- A day over 105°F increases heat related injures by 760% relative to the average day.
- We find no effect for days between 80-85°F

- Non-heat related injuries – "fall, slip, or trip"; "moving part of machine"; "lifting"; etc.
- A day between 80-85°F increases injures by 3.2% relative to the average day.
- A day between 90-95°F increases injures by 4.5% relative to the average day.
- A day over 105°F increases injures by 6.1% relative to the average day.

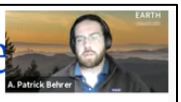
These impacts are much larger for low income workers

At baseline low income workers experience 2x as many injuries as high income workers.

Low income workers also experience 2x as many hot days as high income workers in California.

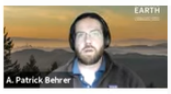
The marginal effect of these hot days also appears to be as much as 40% larger for low income workers.

...but base rates mean non-heat injuries a bigger danger



- On average there were 850 heat related injuries per year from 2000-2018 in California.
- There were roughly 645,000 non-heat related injuries per year over the same time-period.
- Our estimates imply that roughly 4,500 of those were due to heat raising injury risks.

These impacts are much larger for low income workers



At baseline low income workers experience 2x as many injuries as high income workers.

Low income workers also experience 2x as many hot days as high income workers in California.

The marginal effect of these hot days also appears to be as much as 40% larger for low income workers.

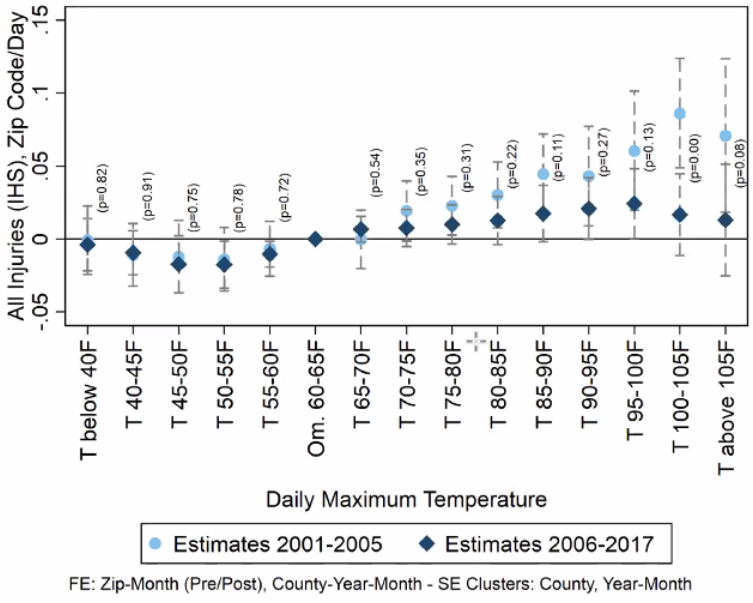
The increase in non-heat injuries on hot days may be due to fatigue and loss of focus, making accidents more likely (higher risk).

It is more difficult to protect outdoor workers (agriculture, construction) from heat than indoor (office and factory) workers.

What does this mean from a policy standpoint?

- California is one of only three U.S. states that currently have mandatory heat standards for workers.
- When the California standard was implemented in 2005 it was the only mandatory standard in the country.

The policy appears to have reduced injuries



- It also seems to have solved some negotiating challenges between workers and firms.
- The policy does not appear to have led to reductions in wages.
- And may have led to increases in employment.

A new law reduced heat injuries, without a decrease in wages or employment.

Hundreds of millions of dollars of economic impact from extreme heat – including lost productivity, lost wages, and higher medical costs.

"Temperature, Workplace Safety, and Labor Market Inequality." IZA Working Paper No. 14560. R. Jisung Park, Nora Pankratz, A. Patrick Behrer

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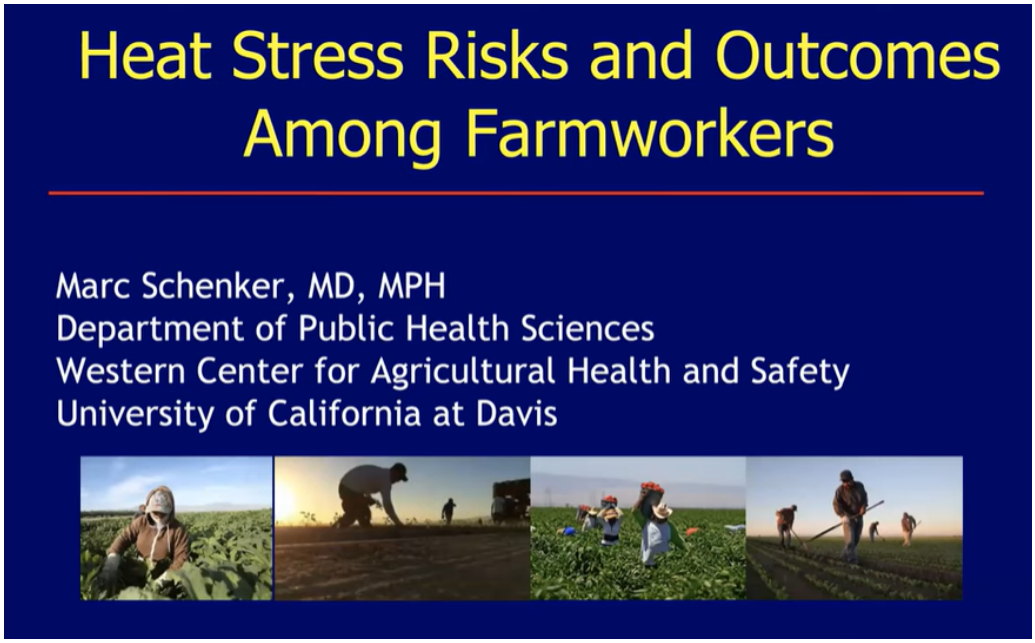
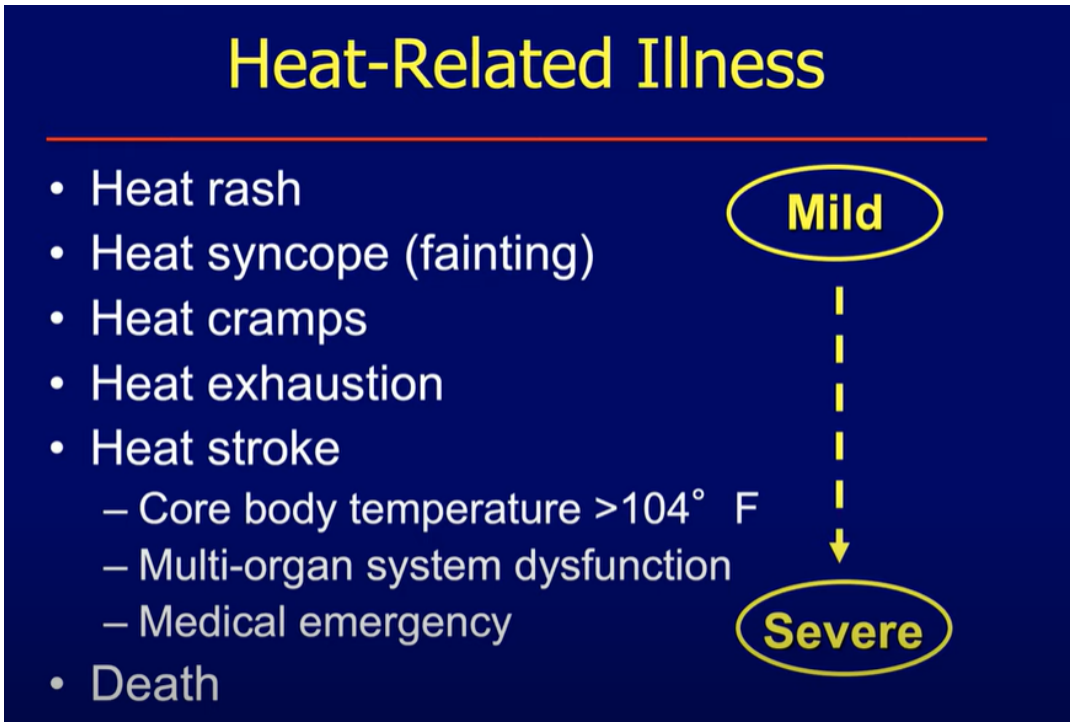
APPENDIX G:
HEAT STRESS RISKS AND OUTCOMES AMONG FARMWORKERS

Mark Schenker, MD, MPH. Distinguished Professor Emeritus & Founding Director, Western Center for Ag Health and Safety, University of California at Davis.

Discussion of a two-year study measuring heat effects at 30 farms





"Classic" Heat-Related Illness
Risk Factors

- Age: Infants and elderly
- Lack of air conditioning
- Social isolation
- Pre-existing medical conditions
- Impaired mobility
- Low socio-economic status
- Housing characteristics

August 3, 2005

"This is a tragedy…and we will do everything it takes to prevent this from happening again"

August 8, 2005
Emergency occupational regulations for heat illness

HESIS/CalOSHA Report

Prudhomme J, Neidhardt A: Cal/OSHA Investigation of Heat Illness. 10/18/07.

https://www.dir.ca.gov/dosh/heatillnessinvestigations-2006.pdf

State of CA studied

- 46 cases of HRI in 2006
- Average temperature 100° F (80-116°)
- Average core body temperature 102°
- 88% available water
- 78% break shade
- 80% on job < 4 days
- 54% strenuous
  19% moderate work

Heat Illness Fatalities in Agriculture, 2008

Maria Isabel Jimenez
May 14, 2008
17 y.o. picking grapes

Ramiro Rodriguez
July 9, 2008
48 y.o. picking nectarines

Jose Hernandez
June 20, 2008
64 y.o. picking squash

Jorge Herrera
July 31, 2008
37 y.o. loading grapes

Abdon Garcia
July 9, 2008
46 y.o. loading grapes

Maria Alvarez
August 2, 2008
63 y.o. picking grapes

CDC Analysis of Occupational Heat Fatalities in Agriculture, U.S. 1992 - 2006

- 423 deaths from occupational heat exposure
- Rate of agricultural worker deaths 20x all industry rate
- 76% agriculture deaths in crop production
- Most (all?) agriculture deaths among immigrant workers

MMWR 57 (24) : 649-653, 2008

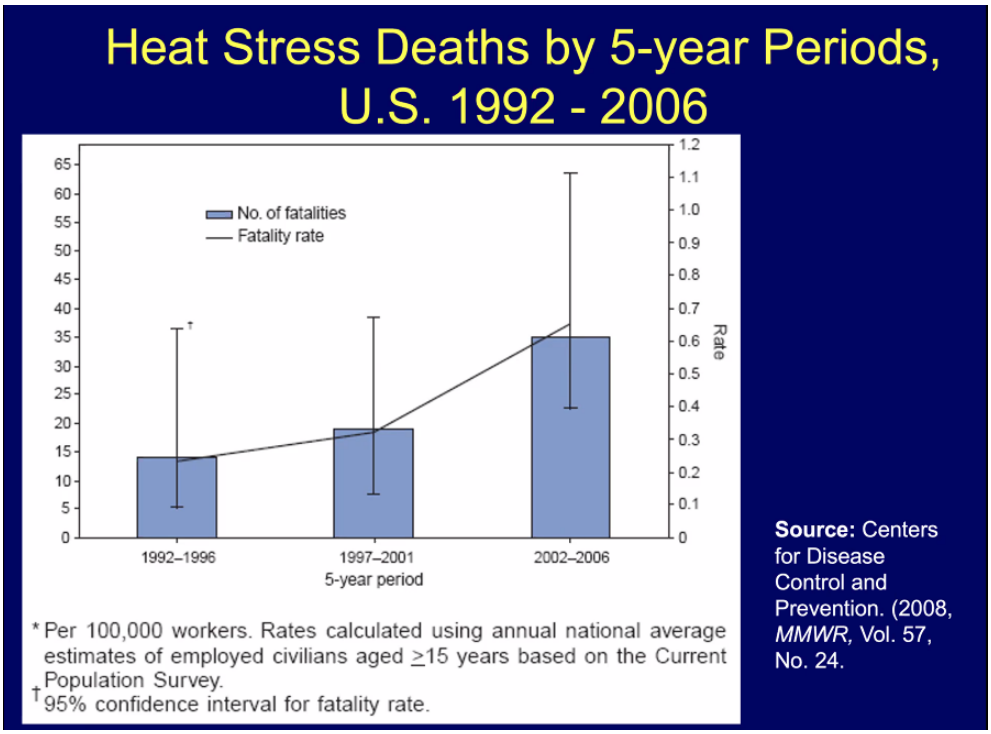
Place of Death, Occupational Heat Fatalities in Agriculture, U.S. 1992 - 2006

State	N	%	Rate*
California	20	29	.49
Florida	6	9	.74
N. Carolina	13	19	2.36
Other	29	23	--

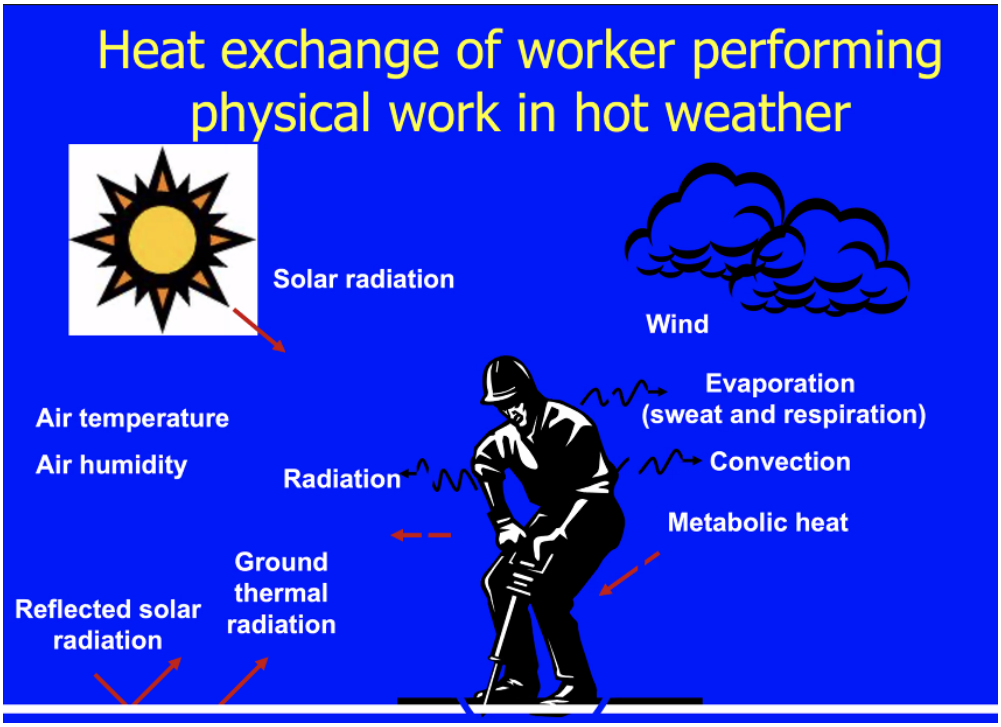
* Per 100,000

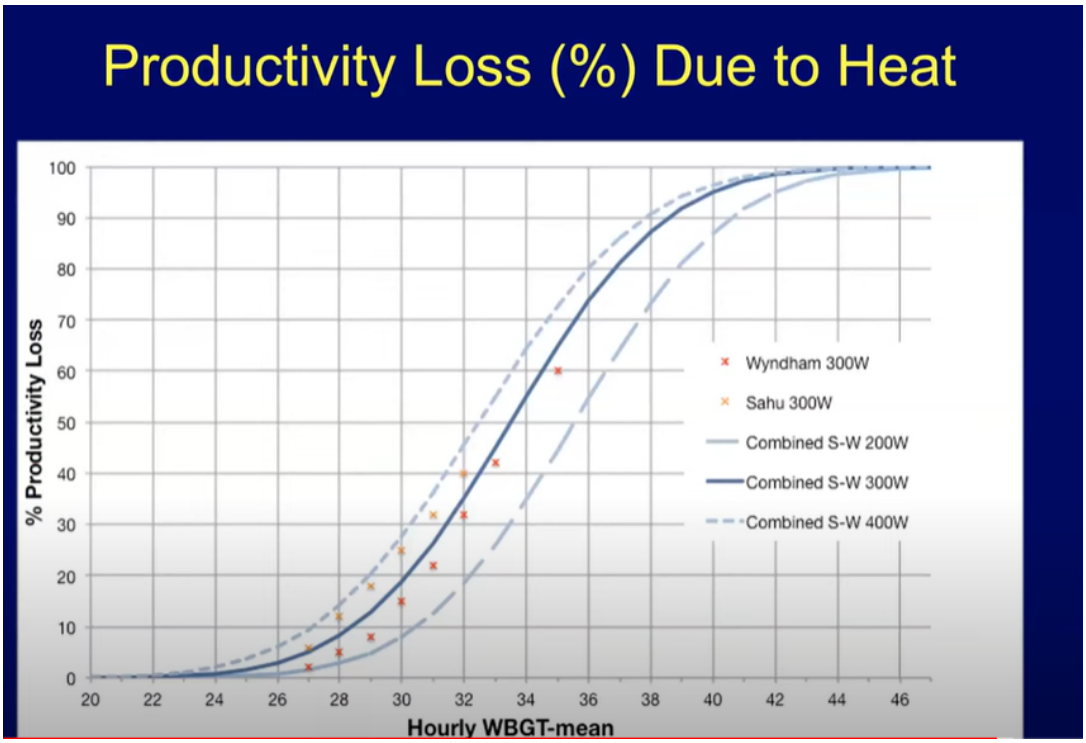
MMWR 57 (24) : 649-653, 2008

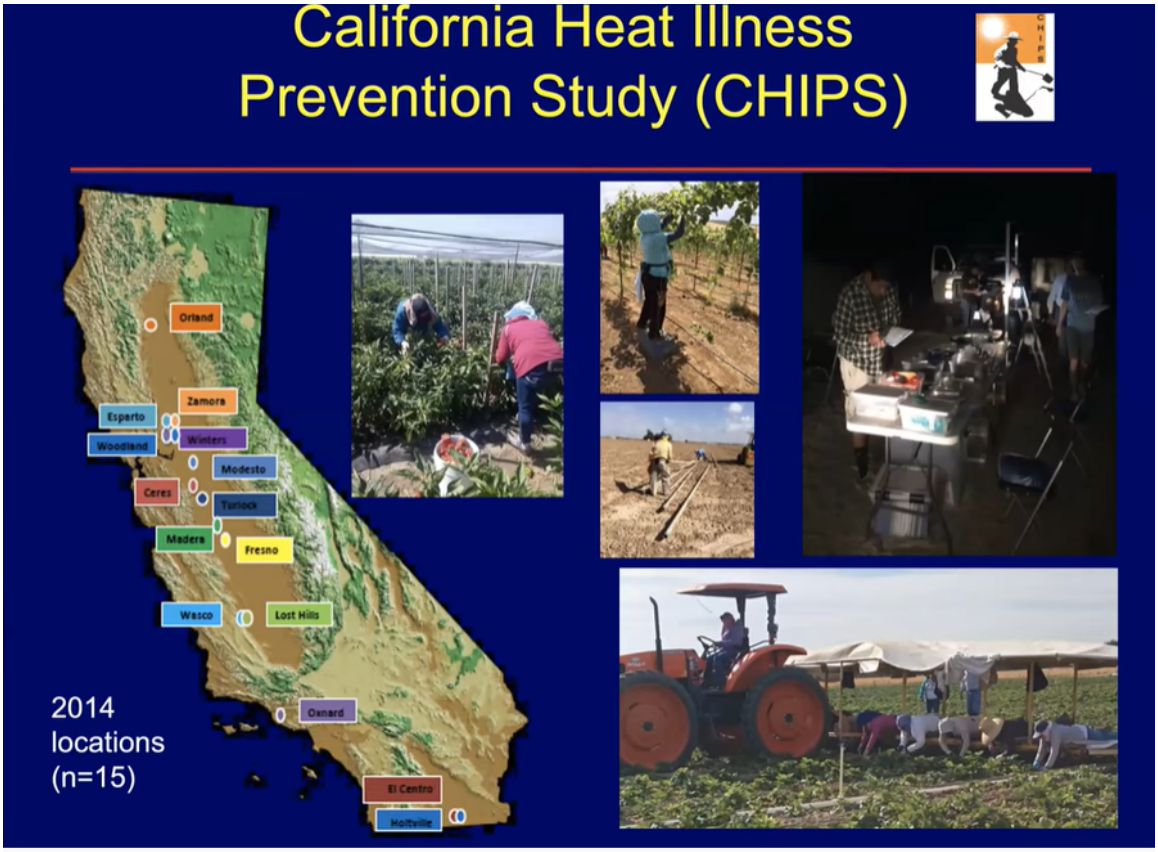
Notice that in the above slide, North Carolina doesn't have heat regulations like California does, and has nearly five times the heat mortality rate.



The above slide shows that the rate of heat fatalities increased in each five-year period that was studied.




Productivity Loss (%) Due to Heat
% Productivity Loss
Hourly WBGT-mean
Wyndham 300W
Sahu 300W
Combined S-W 200W
Combined S-W 300W
Combined S-W 400W


California Heat Illness Prevention Study (CHIPS)
Orland
Zamora
Esparto
Woodland
Winters
Modesto
Ceres
Turlock
Madera
Fresno
Wasco
Lost Hills
Oxnard
El Centro
2014 locations (n=15)

California Heat Illness Prevention Study: CHIPS

Survey and Focus Group Results

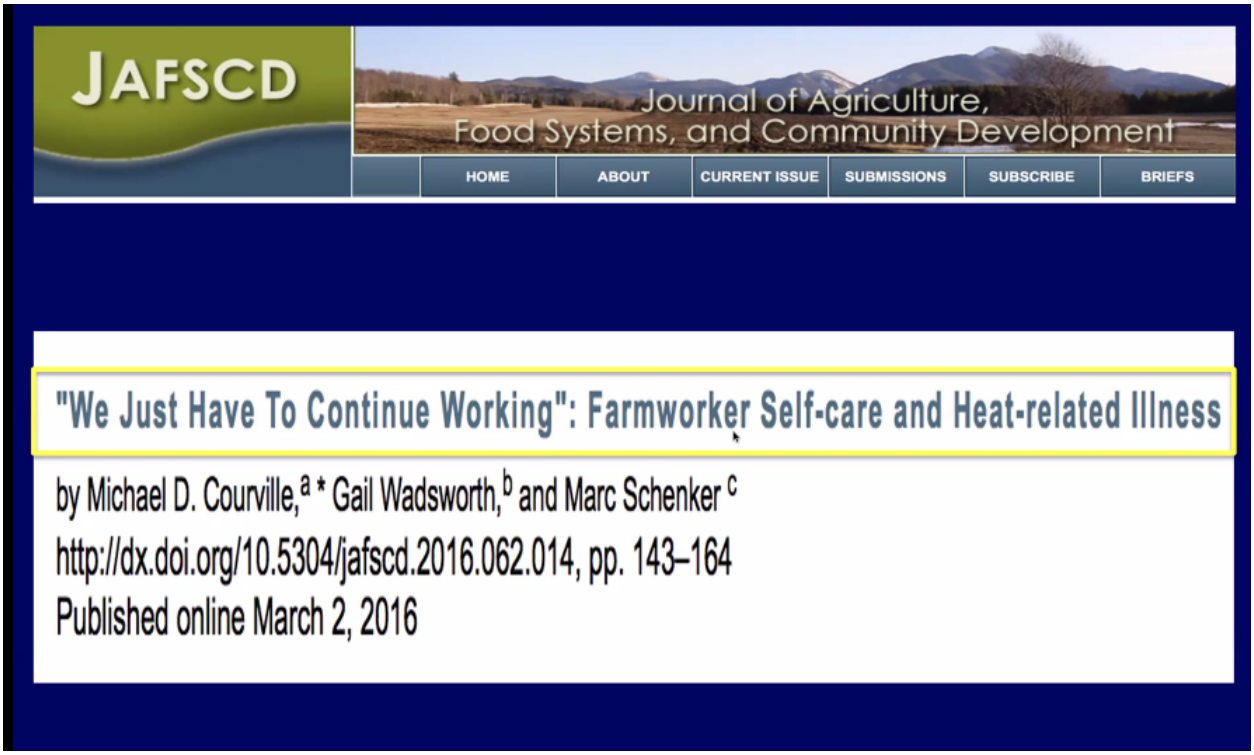
Questionnaire Results: Experience of HRI in a Population-Based Survey (n=587)

48% said they had ever experienced HRI symptoms in the heat, mean = 5 times over career

- 59% of the sufferers were unacclimatized when they last had HRI symptoms
- 42% said they just continued to work, regardless of symptoms
- 54% said they now protect themselves by drinking and resting more, working less intensely, or changing clothing

Thirst and HRI - Work Attitudes and Behaviors

Question	n	(%)
Intensity of thirst:		
Not thirsty / only a little thirsty	78	(27.2)
Thirsty to extremely thirsty	**209**	**(72.8)**
Do you think you drink enough?		
Yes	276	(96.8)
Do you slow down if you feel too thirsty?		
Yes	188	(65.5)
Do you try to work faster to keep up?		
Never / Rarely	101	(35.2)
Occasionally / Frequently	186	(64.8)
Level of concern about HRI at work?		
Not at all	131	(45.8)
A little	122	(42.7)
Very concerned	33	(11.5)



California Heat Illness Prevention Study: CHIPS

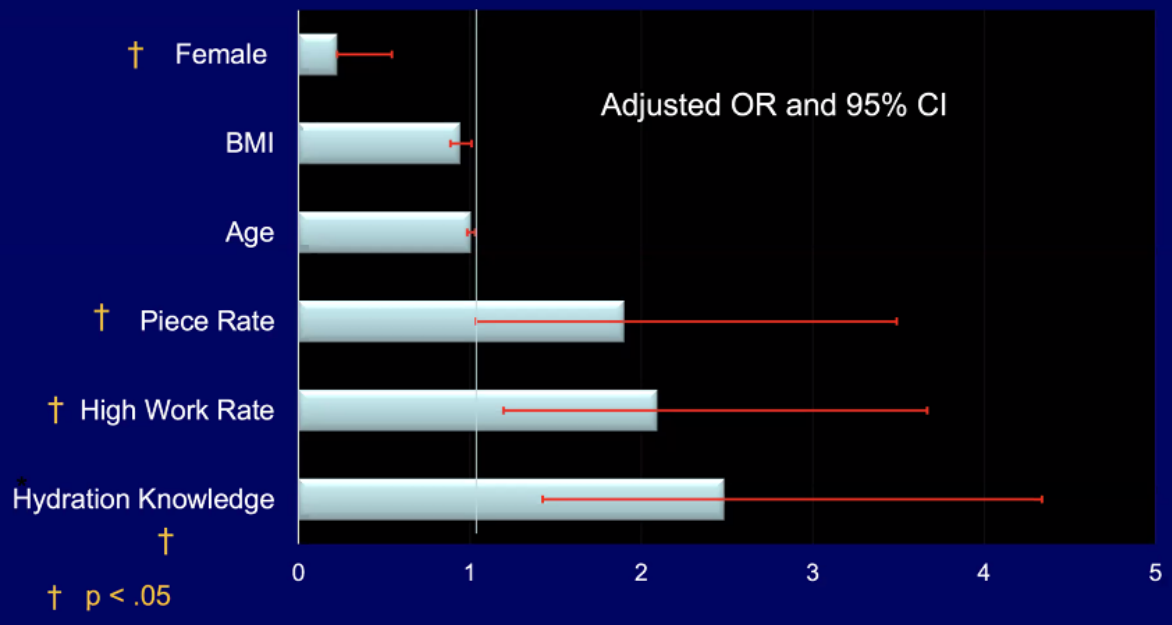
Physiologic Field Studies

Physiological Study

Personal measurements:

- hydration (weight, blood, observation)
- work rate (HR and accelerometer)
- clothing (IR photometry and visual assessment)
- core body temp (pill)
- questionnaire data

Risk Factors for Dehydration (Loss of ≥ 1.5% pre-shift weight)



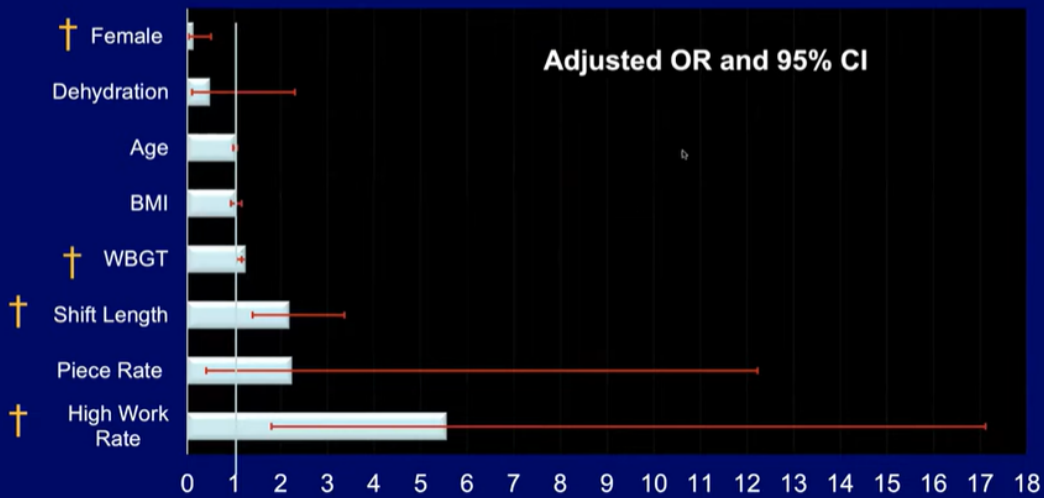
† p < .05

Multivariable Logistic Regression Model (n=572)

20

Elevated Core Body Temperature ≥ 38.5^{0}C

Multivariable Logistic Risk Factor Model. 25/499 workers with sufficient data, recorded 3-minute max cT **≥ 38.5^{0}C**



† statistically significant

21

Summary

- Heat-related illness (HRI) remains a risk of illness and death, especially for the most vulnerable outdoor workers.
- Climate change factors will increase risks in the future.
- Risk factors for HRI are multifactorial and require diverse approaches addressing heat gain and cooling.
- Metabolic heat gain and lack of acclimatization are significant risk factor for HRI.
- Approaches should include education, engineering and enforcement efforts, and address cultural beliefs and perceptions.

California Heat Illness Prevention Study (CHIPS) Faculty and Staff

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